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EMPHYSEMATOUS GASTRITIS PRECIPITATED BY MALIGNANT GASTRIC OUTLET OBSTRUCTION FROM ADVANCED PANCREATIC DUCTAL ADENOCARCINOMA

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ABSTRACT

Introduction: Emphysematous gastritis is a rare, frequently fatal infection of the gastric wall caused by gas-forming organisms. Gastric outlet obstruction is well recognised as a cause of benign gastric emphysema but is seldom reported as a precipitant of emphysematous gastritis. This report adds a rare presentation of emphysematous gastritis with malignant gastric outlet obstruction as a risk factor.

Case description: An 86-year-old man with locally advanced pancreatic ductal adenocarcinoma presented after a fall preceded by generalised weakness, abdominal bloating, diarrhoea, nausea and fever. He was hypotensive and tachycardic, with acute kidney injury and severe high anion gap metabolic acidosis. Computed tomography scan demonstrated a markedly distended stomach with intramural gas and distal obstruction from progressive pancreatic malignancy; blood cultures were negative. He was managed non-operatively with aggressive resuscitation, broad-spectrum intravenous antibiotics and gastric decompression, with subsequent clinical, biochemical and radiological improvement.

Conclusion: Malignant gastric outlet obstruction, compounded by chemotherapy-related immunosuppression, can precipitate emphysematous gastritis. In selected patients without perforation or ischaemia, even those who are frail and immunocompromised, conservative management can achieve resolution.

KEYWORDS

Emphysematous gastritis, gastric outlet obstruction, pancreatic ductal adenocarcinoma, benign gastric emphysema

LEARNING POINTS

- Malignant gastric outlet obstruction from advanced pancreatic cancer can precipitate emphysematous gastritis, a rare and often fatal infection, particularly when compounded by chemotherapy-related immunosuppression.
- This case adds to the growing evidence that carefully selected patients without perforation or ischaemia can be managed conservatively with antibiotics and gastric decompression rather than surgery.

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INTRODUCTION

Emphysematous gastritis is a rare, life-threatening condition characterised by inflammation of the stomach lining and gas within the gastric wall, with mortality rates up to 55%[1]. It was first described by Fraenkel in 1889 and remains an extremely rare condition[2]. Reported risk factors include gastric surgery, corticosteroid use, non-steroidal anti-inflammatory drug use, ingestion of corrosive agents, stress, diabetes mellitus, immunodeficiency, high alcohol consumption, malnutrition and renal failure[3]. Emphysematous gastritis is primarily caused by gas-forming bacteria, but the exact pathophysiology remains unclear[4]. There are currently no standardised guidelines for its management. Surgery was historically the mainstay of treatment, but there is a growing trend favouring conservative management with broad-spectrum antibiotics, bowel rest and nasogastric decompression[5,6].

Gastric outlet obstruction is an infrequently mentioned risk factor for emphysematous gastritis, despite being a known risk factor for the more benign gastric emphysema[3]. Aggarwal et al. describe how the pathophysiology of gastric emphysema can progress to emphysematous gastritis through multiple predisposing factors, including mucosal injury, microbial invasion, ischaemic changes and immune compromise[4]. We report emphysematous gastritis precipitated by malignant gastric outlet obstruction from advanced pancreatic ductal adenocarcinoma in a patient receiving oral chemotherapy, successfully managed non-operatively.

CASE DESCRIPTION

An 86-year-old man presented after an unwitnessed fall attributed to generalised weakness. He also reported a few days of abdominal bloating, diarrhoea and nausea, and one day of fever.

His oncological history was notable for synchronous locally advanced pancreatic ductal adenocarcinoma with vascular encasement and perineural spread, and locally advanced prostate carcinoma previously treated with androgen deprivation therapy. He had previously declined further intravenous chemotherapy and surgery due to frailty and quality-of-life considerations. Oral chemotherapy, TS-1 (tegafur/gimeracil/oteracil), had recently been restarted one week before his presentation. His other medical history included ischaemic heart disease with previous coronary angioplasty and well-controlled diabetes mellitus. He was not on corticosteroids or non-steroidal anti-inflammatory drugs.

On initial examination, the patient was afebrile but hypotensive, with a blood pressure of 73/47 mmHg, and tachycardic, with a heart rate of 116 beats per minute. Abdominal examination revealed a distended abdomen with mild lower abdominal tenderness and preserved bowel sounds. Initial blood tests showed elevated levels of C-reactive protein; 87.6 mg/l, serum creatinine; 182 µmol/l (baseline approximately 90 µmol/l), and serum lactate; 3.51 mmol/l. The patient had severe metabolic acidosis with a serum bicarbonate level of 9 mmol/l. He initially had a normal white blood cell count, which later rose to 13.3 $\times 10^9$/l on Day 3 of admission. Blood cultures were obtained prior to commencement of antibiotics and yielded no growth. Stool cultures were not collected.



Figure 1. *Computed tomography scan of the abdomen without contrast showing intramural gas foci in the stomach.*

Urgent non-contrast computed tomography (CT) scan of the abdomen, performed in view of the acute kidney injury, showed a markedly distended stomach with diffuse gastric mural thickening and extensive dependent gas, predominantly intraluminal, with several foci suspicious for intramural gas *(Fig. 1)*. No portal venous gas was identified. There was also progressive pancreatic malignancy causing distal upper gastrointestinal obstruction.

The patient received aggressive intravenous fluid resuscitation. Broad-spectrum antimicrobial cover was commenced with intravenous piperacillin/tazobactam. General surgery was consulted, and nasogastric decompression with bowel rest was started. Upper endoscopy was deferred given the patient's clinical frailty and haemodynamic instability at presentation; the diagnosis was established on the basis of CT findings and the clinical picture. After improvement in creatinine clearance, repeat contrast-enhanced CT scan showed no perforation or ischaemia. In view of advanced malignancy, frailty and the absence of ischaemia, a collective decision for non-surgical management was made. Background oral chemotherapy (TS-1) was withheld during the acute illness. Renal function and metabolic acidosis improved with treatment. Follow-up imaging demonstrated reduction in gastric mural gas without perforation or abscess formation. Enteral feeding access was subsequently established via the naso-jejunal route. Despite improvement in the emphysematous gastritis, the patient's overall prognosis remained limited due to progressive pancreatic malignancy and recurrent hospital-acquired infections. Following discussion with the family and medical oncology, a decision was made to transition to best supportive care.

DISCUSSION

Emphysematous gastritis most commonly presents with

abdominal pain, nausea, vomiting and diarrhoea, though presentations can be variable and non-specific[3,4]. The pathophysiology in this case was likely multifactorial. Malignant gastric outlet obstruction caused marked gastric distension, increasing intraluminal pressure and predisposing to mucosal injury and bacterial translocation. Gastric outlet obstruction and delayed gastric emptying are recognised to promote bacterial overgrowth and are specifically associated with gas-forming organisms which thrive in the retained, acidic gastric contents that accumulate proximal to an obstruction[7]. Concurrently, TS-1 chemotherapy — a fluoropyrimidine that inhibits thymidylate synthase — impairs gastrointestinal mucosal integrity and suppresses host immunity; emphysematous gastritis has been reported as a rare complication of cytotoxic chemotherapy through precisely these mechanisms[8]. Nasser et al. proposed that gastric emphysema and emphysematous gastritis represent a spectrum of the same disease, with severity determined by the degree of mucosal disruption and immune dysfunction[5]. This case supports that continuum, with malignant obstruction providing the mechanical insult and chemotherapy-related immunosuppression facilitating bacterial invasion.

Our case supports the growing trend toward non-operative management for emphysematous gastritis[6] and reinforces evidence that carefully selected patients without perforation or ischaemia can be managed medically[5,6,9].

Several limitations should be acknowledged. No causative organism was identified: blood cultures were negative, which is not uncommon, as an organism is identified in only about half of reported cases[5,10]. Upper endoscopy and gastric biopsy were not performed given haemodynamic instability and frailty, so histological confirmation and direct assessment of mucosal viability were not available.

Our case suggests that malignant gastric outlet obstruction should be considered a potential precipitant of emphysematous gastritis, particularly alongside chemotherapy-related immunosuppression. CT scan remains the diagnostic modality of choice.

Malignant gastric outlet obstruction from advanced pancreatic ductal adenocarcinoma, compounded by chemotherapy-related immunosuppression, can precipitate emphysematous gastritis. Early CT imaging is central to diagnosis and to distinguishing emphysematous gastritis from the more benign gastric emphysema. In carefully selected patients without perforation or ischaemia, even those who are frail and immunocompromised, conservative management with broad-spectrum antibiotics, nasogastric decompression and supportive care can achieve resolution.

REFERENCES

1. Matsushima K, Won EJ, Tangel MR, Enomoto LM, Avella DM, Soybel DI. Emphysematous gastritis and gastric emphysema: similar radiographic findings, distinct clinical entities. World J Surg. 2015;39(4):1008–17. doi: 10.1007/s00268-014-2882-7.
2. Ono R, Ito R, Yamamoto K, Aoki K, Kobayashi Y. Emphysematous gastritis. BMJ Case Rep. 2022;15(8):e251314. doi: 10.1136/bcr-2022-251314.
3. Qasim A, Penikelapate S, Sosa F, Jyala A, Ghazanfar H, Patel H, et al. Emphysematous gastritis: a case series on a rare but critical gastrointestinal condition. Cureus. 2023;15(12):e50409. doi: 10.7759/cureus.50409.
4. Aggarwal CS, Dahiya S, Kochhar S, Aggarwal K, Edgecombe L, Jeje T, et al. Emphysematous gastritis: the silent storm within the stomach wall. J Int Med Res. 2025;53(10). doi: 10.1177/03000605251389384.
5. Nasser H, Ivanics T, Leonard-Murali S, Shakaroun D, Woodward A. Emphysematous gastritis: a case series of three patients managed conservatively. Int J Surg Case Rep. 2019;64:80–4. doi: 10.1016/j.ijscr.2019.10.003.
6. Watson A, Bul V, Staudacher J, Carroll R, Yazici C. The predictors of mortality and secular changes in management strategies in emphysematous gastritis. Clin Res Hepatol Gastroenterol. 2017;41(1):e1–7. doi: 10.1016/j.clinre.2016.02.011.
7. Birkholz T, Kim GJ, Niehaus H, Conrad-Schnetz K. Non-operative management of Sarcina ventriculi-associated severe emphysematous gastritis: a case report. Cureus. 2022;14(11):e31543. doi: 10.7759/cureus.31543.
8. Ogbue OD, Haddad A, Daw H. A rare case of emphysematous gastritis secondary to chemotherapy. Cureus. 2021;13(10):e18895. doi: 10.7759/cureus.18895.
9. Kyawzaw L, Emmanuel O, Sandar L. Medical management of emphysematous gastritis. Ann Intern Med Clin Cases. 2022. doi: 10.7326/aimcc.2022.0799.
10. Jenkins JK, Georgiou A, Laugharne M, Meisner S, Cook T. Emphysematous gastritis in a patient with neutropenic sepsis: a case report and literature review with comment on management. J Intensive Care Soc. 2023;24(3):334–8. doi: 10.1177/17511437231153048.